

OPG Proprietary

CD# NK38-CORR-00531-25450 P

Ms. C. Salmon
Commission Registrar
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario, K1P 5S9

Dear Ms. C. Salmon:

**Darlington NGS – Application for Renewal of the Darlington Nuclear
Generating Station Power Reactor Operating Licence 13.03/2025**

The purpose of this letter is to submit to the Canadian Nuclear Safety Commission (CNSC) Ontario Power Generation Inc.'s (OPG) application for renewal of the Darlington Nuclear Generating Station (NGS) Power Reactor Operating Licence, PROL 13.03/2025, which expires on November 30, 2025.

OPG requests a 30-year licence renewal from December 1, 2025 to November 30, 2055.

OPG is an Ontario-based electricity generation company whose principal business is the generation and sale of electricity in Ontario. OPG head office is located at 700 University Avenue, Toronto, Ontario, M5G 1X6.

The management and control of operation of the Darlington NGS and the nuclear substances, prescribed equipment, and associated prescribed information, are the overall responsibility of Mr. Allan Grace, Senior Vice-President.

The Darlington NGS facility consists of four nuclear reactors designed, constructed and operated primarily to produce electrical power. Darlington NGS also includes the Tritium Removal Facility (TRF) housed within the Heavy Water Management Building. The TRF is designed, constructed, and operated to reduce the tritium levels in heavy water inventories.

In 2016, Darlington commenced station refurbishment activities consisting of the replacement, upgrades and the rehabilitation of critical components, which will allow for safe and reliable station operation through 2055. The Refurbishment Project is more than two-thirds complete in its 10-year execution phase, realizing strong safety, quality and schedule performance. Units 2 and 3 were successfully refurbished and returned to service and are operating at full capacity. Units 1 and 4 refurbishments are continuing with a targeted return to service in Q2 of 2025 (prior to licence renewal) and Q3 of 2026, respectively.

This licence renewal application has been prepared in accordance with the requirements of the *Nuclear Safety and Control Act* and the associated Regulations. This submission is also being made as per the requirements and guidance in Regulatory Document REGDOC-1.1.3, *Licence Application Guide: Licence to Operate a Nuclear Power Plant* and in accordance with the additional instructions provided by CNSC staff in Reference 1.

In Reference 1, CNSC staff also requested, for identified Canadian Standards Association (CSA) standards and CNSC REGDOCs, that OPG provide implementation plans or justification for the CSA standards or REGDOCs to be used as guidance in the Darlington Licence Conditions Handbook. OPG provided this information in Reference 2.

For ease of use, Attachment 1 provides a “*Licence Renewal Application Matrix – Applicable Regulations*”, to assist CNSC staff in locating specific information within the application.

Attachment 2 provides the “*Darlington Nuclear Generating Station Power Reactor Operating Licence Renewal Application*” describing the 14 Safety and Control Areas, facility-specific information, additional matters of regulatory interest, OPG's programs, station performance during the current licence period and planned improvements.

The information provided within this licence application demonstrates that OPG is qualified to carry on the licensed activities to operate a Class I nuclear facility and makes adequate provisions to protect the health, safety and security of persons and the environment, and maintain national security and measures required to implement international obligations.

OPG is committed to the safe and reliable operation of the Darlington NGS and continues to meet the requirements of the *Nuclear Safety and Control Act* and the associated Regulations.

Should you require any further information, please contact Ms. Aditi Bhardwaj, Senior Manager, Darlington Regulatory Affairs, at 289-387-2110.

Sincerely,



Allan Grace
Senior Vice President
Darlington Nuclear
Ontario Power Generation Inc.

Attach.

cc: CNSC Site Supervisor – Darlington
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- References:
1. CNSC Letter, A. Mathai to R. Geofroy, “Application Requirements for Renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence”, April 10, 2024, e-Doc# 7058965, CD# NK38-CORR-00531-24688.
 2. OPG Letter, A. Grace to A. Mathai, “Response to CNSC Staff’s Request for Implementation Plans or Justification for Identified Documents to be Guidance in the Darlington Licence Conditions Handbook”, March 19, 2024, CD# NK38-CORR-00531-25234.

ATTACHMENT 1

OPG letter, A. Grace to C. Salmon, "Darlington NGS: Application for Renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence 13.03/2025"

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Licence Renewal Application Matrix – Application Regulations

(6 pages)

Attachment 1

Table 1: Licence Renewal Application Matrix – Applicable Regulations

NOTE: Unless otherwise specified, all sections cross-referenced below refer to Attachment 2.

Section	Regulatory Requirement	Location in Submission
General Nuclear Safety and Control Regulations		
LICENCES - General Application Requirements		
3 (1)	An application for a licence shall contain the following information:	Cover letter
	(a) the applicant’s name and business address;	
	(b) the activity to be licensed and its purpose;	Appendix C
	(c) the name, maximum quantity and form of any nuclear substance to be encompassed by the licence;	Appendix C
	(d) a description of any nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence;	Section 1.1
	(e) the proposed measures to ensure compliance with the <i>Radiation Protection Regulations</i> , the <i>Nuclear Security Regulations</i> and the <i>Packaging and Transport of Nuclear Substances Regulations, 2015</i>	Sections 2.7, 2.12 and 2.14
	(f) any proposed action level for the purpose of section 6 of the <i>Radiation Protection Regulations</i> ;	Sections 2.7 and 2.9
	(g) the proposed measures to control access to the site of the activity to be licensed and the nuclear substance, prescribed equipment or prescribed information;	Section 2.12
	(h) the proposed measures to prevent loss or illegal use, possession or removal of the nuclear substance, prescribed equipment or prescribed information;	Sections 2.12 and 2.13
	(i) a description and the results of any test, analysis or calculation performed to substantiate the information included in the application;	Section 1.1 and 2.4
	(j) the name, quantity, form, origin and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste;	Section 2.11, Appendix C and Appendix D
(k) the applicant’s organizational management structure insofar as it may bear on the applicant’s compliance with the Act and the	Section 2.1	

Section	Regulatory Requirement	Location in Submission
	regulations made under the Act, including the internal allocation of functions, responsibilities and authority;	
	(l) a description of any proposed financial guarantee relating to the activity to be licensed; and	Section 4.3
	(m) any other information required by the Act or the regulations made under the Act for the activity to be licensed and the nuclear substance, nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence.	Throughout
3 (1.1)	The Commission or a designated officer authorized under paragraph 37(2)(c) of the Act, may require any other information that is necessary to enable the Commission or the designated officer to determine whether the applicant (a) is qualified to carry on the activity to be licensed; or	See Table 2 in this Attachment 1.
	(b) will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.	Sections 2.7, 2.8, 2.9, 2.10, 2.12, 2.13
LICENCES – Application for Renewal of Licence		
5	An application for the renewal of a licence shall contain (a) the information required to be contained in an application for that licence by the applicable regulations made under the Act; and	Throughout
	(b) a statement identifying the changes in the information that was previously submitted.	Throughout
OBLIGATIONS – Representatives of Applicants and Licensees		
15	Every applicant for a licence and every licensee shall notify the Commission of (a) the persons who have authority to act for them in their dealings with the Commission;	OPG Letter “OPG – Persons Authorized to Act on Behalf of OPG in Dealings with the CNSC and Senior Leadership Positions with Responsibility for Safety”, March 25, 2024, N-CORR-00631-23968.
	(b) the names and position titles of the persons who are responsible for the management and control of the licensed activity and the nuclear substance, nuclear facility, prescribed	Cover letter; also OPG Letter “OPG – Persons Authorized to Act

Section	Regulatory Requirement	Location in Submission
	equipment, or prescribed information encompassed by the licence; and	on Behalf of OPG in Dealings with the CNSC and Senior Leadership Positions with Responsibility for Safety”, March 25, 2024, N-CORR-00631-23968.
	(c) any change in the information referred to in paragraphs (a) and (b), within 15 days after the change occurs.	OPG will continue to provide the required information.
Class I Nuclear Facilities Regulations		
LICENCE APPLICATIONS – General Requirements		
3	<p>An application for a licence in respect of a Class I nuclear facility, other than a licence to abandon, shall contain the following information in addition to the information required by section 3 of the <i>General Nuclear Safety and Control Regulations</i>:</p> <p>(a) a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone;</p> <p>(b) plans showing the location, perimeter, areas, structures and systems of the nuclear facility;</p> <p>(c) evidence that the applicant is the owner of the site or has authority from the owner of the site to carry on the activity to be licensed;</p> <p>(d) the proposed management system for the activity to be licensed, including measures to promote and support safety culture;</p> <p>(d.1) the proposed human performance program for the activity to be licensed, including measures to ensure workers’ fitness for duty.</p> <p>(e) The name, form, characteristics and quantity of any hazardous substances that may be on the site while the activity to be licensed is carried on;</p> <p>(f) the proposed worker health and safety policies and procedures;</p> <p>(g) the proposed environmental protection policies and procedures;</p> <p>(h) the proposed effluent and environmental monitoring programs;</p> <p>(i) if the application is in respect of a nuclear facility referred to in a paragraph 2(b) of the Nuclear Security Regulations, the information required by section 3 of those Regulations;</p> <p>(j) the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects</p>	<p>Section 1.1</p> <p>Section 1.1</p> <p>Section 1.1</p> <p>Section 2.1</p> <p>Section 2.2</p> <p>Appendix D</p> <p>Section 2.8</p> <p>Section 2.9</p> <p>Section 2.9</p> <p>Section 2.12</p> <p>Section 4.4</p>

Section	Regulatory Requirement	Location in Submission
	on the environment and the health and safety of persons that may result from the activity to be licensed; and	
	(k) the proposed plan for the decommissioning of the nuclear facility or of the site.	Section 2.11
LICENCE APPLICATIONS – Licence to Operate		
6	An application for a licence to operate a Class I nuclear facility shall contain the following information in addition to the information required by section 3:	Sections 1.1 and 2.5
	(a) a description of the structures at the nuclear facility, including their design and their design operating conditions;	
	(b) a description of the systems and equipment at the nuclear facility, including their design and their design operating conditions;	Section 2.5
	(c) a final safety analysis report demonstrating the adequacy of the design of the nuclear facility;	Section 2.4
	(d) the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility;	Sections 2.3, 2.6
	(e) the proposed procedures for handling, storing, loading and transporting nuclear substances and hazardous substances;	Sections 2.5, 2.6, 2.11, 2.14
	(f) the proposed measures to facilitate Canada's compliance with any applicable safeguards agreement;	Section 2.13
	(g) the proposed commissioning program for the systems and equipment that will be used at the nuclear facility;	Section 3.2
	(h) the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects;	Sections 2.7, 2.8, 2.9, 2.11
	(i) the proposed location of points of release, the proposed maximum quantities and concentrations, and the anticipated volume and flow rate of releases of nuclear substances and hazardous substances into the environment, including their physical, chemical and radiological characteristics;	Section 2.9
	(j) the proposed measures to control releases of nuclear substances and hazardous substances into the environment;	Section 2.9
	(k) the proposed measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the	Section 2.10

Section	Regulatory Requirement	Location in Submission
	environment, the health and safety of persons and the maintenance of national security, including measures to (i) assist off-site authorities in planning and preparing to limit the effects of an accidental release, (ii) notify off-site authorities of an accidental release or the imminence of an accidental release, (iii) report information to off-site authorities during and after an accidental release, (iv) assist off-site authorities in dealing with the effects of an accidental release, and (v) test the implementation of the measures to prevent or mitigate the effects of an accidental release;	
	(l) the proposed measures to prevent acts of sabotage or attempted sabotage at the nuclear facility, including measures to alert the licensee to such acts;	Section 2.12
	(m) the proposed responsibilities of and qualification requirements and training program for workers, including the procedures for the requalification of workers; and	Section 2.2
	(n) the results that have been achieved in implementing the program for recruiting, training and qualifying workers in respect of the operation and maintenance of the nuclear facility.	Section 2.2
<i>Nuclear Security Regulations</i>		
LICENCE APPLICATION – Licence in Respect of Category I or II Nuclear Material or a Nuclear Facility		
3	An application for a licence in respect of Category I or II nuclear material, other than a licence to transport, and an application for a licence in respect of a nuclear facility referred to in paragraph 2(b) shall contain the following information in addition to the information required by section 3 of the <i>Nuclear Substances and Radiation Devices Regulations</i> or sections 3 to 8 of the <i>Class I Nuclear Facilities Regulations</i> , as applicable: (a) a copy of the arrangements referred to in section 35;	Section 2.12
	(b) the site plan referred to in section 16;	Sections 1.1 and 2.5
	(c) a description of the proposed security equipment, systems and procedures;	Section 2.12

Section	Regulatory Requirement	Location in Submission
	(d) a description of the proposed on-site and off-site communications equipment, systems and procedures;	Section 2.12
	(e) a description of the proposed structure and organization of the nuclear security officer service, including the duties, responsibilities and training of nuclear security officers;	Section 2.12
	(f) the proposed plan and procedures to assess and respond to breaches of security; and	Section 2.12
	(g) the current threat and risk assessment.	Section 2.12

Table 2: Licence Application Matrix – Additional Matters of Regulatory Interest Identified by CNSC

No.	Item	Location in Submission
1	Environmental assessment	Section 2.9 and 4.1
2	Indigenous engagement	Section 4.2
3	Cost recovery	Section 4.3
4	Financial guarantees	Section 4.3
5	Improvement plans and significant future activities	Section 1.5
6	Licensee public information program	Section 4.4
7	Nuclear Liability insurance	Section 4.3

ATTACHMENT 2

OPG letter, A. Grace to C. Salmon, "Darlington NGS: Application for Renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence 13.03/2025"

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Darlington Nuclear Generating Station Power Reactor Operating Licence Renewal Application

(320 pages)

Summary of Regulatory Commitments, Regulatory Obligations and Regulatory Management Actions Made/Concurrence Requested

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Submission Title: **Darlington NGS – Application for Renewal of the Darlington Nuclear Generating Station Power Reactor Operating Licence 13.03/2025**

Regulatory Commitments (REGC):

No.	Description	Date to be Completed
	None.	

Regulatory Management Action (REGM):

No.	Description	Date to be Completed
	None.	

Regulatory Obligation Action (REGO):

No.	Description	Date to be Completed
	None.	

Concurrence Requested: None